

***Amendments to the Claims***

This "Listing of Claims" replaces all prior versions of claims in the subject application:

1. (Original) A microfabricated chemical reactor, comprising:
  - a plurality of lamina;
  - an inlet port formed in at least one said lamina;
  - an outlet port formed in at least one said lamina;
  - a continuous channel formed in at least one said lamina providing fluid communication between said inlet port and said outlet port; and
  - a particle filter in said continuous channel and formed by one said lamina, wherein said particle filter restricts flow through said continuous channel.
2. (Original) The microfabricated chemical reactor of claim 1, wherein said particle filter is a plurality of structures disposed across said continuous channel.
3. (Original) The microfabricated chemical reactor of claim 1, further comprising:
  - a plurality of solid particles disposed in said continuous channel,wherein said particle filter separates said solid particles from said outlet port.
4. (Original) The microfabricated chemical reactor of claim 1, wherein said particle filter is integral to said continuous channel.
5. (Original) The microfabricated chemical reactor of claim 2, wherein each said structures is a post.

6. (Original) The microfabricated chemical reactor of claim 5, wherein said particle filter is a series of said posts that are spaced apart to allow flow through said filter while retaining said solid particles within said reaction channel.
7. (Original) The microfabricated chemical reactor of claim 5, wherein said particle filter restricts passage of particles greater than 500  $\mu\text{m}$  in diameter.
8. (Original) The microfabricated chemical reactor of claim 1, wherein said particle filter restricts passage of particles greater than 50  $\mu\text{m}$  in diameter.
9. (Original) The microfabricated chemical reactor of claim 1, wherein said particle filter restricts passage of particles greater than 25  $\mu\text{m}$  in diameter.
10. (Original) The microfabricated chemical reactor of claim 3, further comprising:  
a solid particle inlet formed in at least one of said lamina.
11. (Original) The microfabricated chemical reactor of claim 10, wherein said solid particles are selected from the group consisting of catalyst particles, polystyrene particles, carbon particles, polymer beads, metals supported on alumina particles, and metals supported on glass particles.
12. (Original) The microfabricated chemical reactor of claim 10, wherein said solid particles comprise platinum supported on alumina particles.
13. (Original) The microfabricated chemical reactor of claim 1, further comprising:  
a gas inlet port formed in at least one of said lamina.
14. (Original) The microfabricated chemical reactor of claim 13, further comprising:

a plurality of feed channels providing fluid communication between said continuous channel and at least one said gas inlet port, and between said continuous channel and a liquid inlet port, and wherein said plurality of feed channels is connected to said continuous channel by a microfluidic feed manifold.

15. (Currently Amended) A microfabricated chemical reactor, comprising

a plurality of lamina;

a liquid inlet port formed in at least one of said lamina;

a gas inlet port formed in at least one of said lamina;

an outlet port defined in at least one of said lamina;

a continuous channel formed in at least one of said lamina providing fluid communication between said liquid inlet port and said outlet port, and between said gas inlet port and said outlet port;

a plurality of gas feed channels providing fluid communication between said continuous channel and ~~at least one of said gas inlet port and a plurality of liquid feed channels providing fluid communication between said continuous channel and~~ said liquid inlet port, wherein said plurality of gas feed channels is connected to said continuous channel by a microfluidic feed manifold, wherein said microfluidic feed manifold comprises an interleaved arrangement of said plurality gas feed channels and said plurality of said liquid feed channels.

16. (Currently Amended) A microfabricated chemical reactor, comprising:

a plurality of lamina;

an inlet port formed in at least one of said lamina;

an outlet port formed in at least one of said lamina;

a plurality of continuous channels formed in at least one said lamina  
providing fluid communication between said inlet port and said outlet port;

at least one particle inlet formed in at least one lamina; and

at least one particle inlet channel providing fluid communication between  
said at least one particle channel and said outlet port.

17. (Currently Amended) The microfabricated chemical reactor of claim ~~17~~16, wherein said inlet port is in fluid communication with said plurality of continuous channels by a plurality inlet distribution channels.
18. (Currently Amended) The microfabricated chemical reactor of claim ~~18~~17, wherein each of said inlet distribution channels is sized to provide even flow distribution to each said continuous channel.
19. (Currently Amended) The microfabricated chemical reactor of claim ~~17~~16, comprising:

a second inlet port defined in at least one of said lamina, wherein said plurality of continuous channels provides fluid communication between said second inlet port and said outlet port.
20. (Currently Amended) The microfabricated chemical reactor of claim ~~17~~16, wherein at least a region of each of said continuous channels is packed with a plurality of solid particles.
21. (Currently Amended) The microfabricated chemical reactor of claim ~~17~~16, wherein at least one of said continuous channels is packed with a plurality of

first solid particles and at least another of said continuous channels is packed with a plurality of second solid particle.

22. (Currently Amended) The microfabricated chemical reactor of claim 2221, wherein said first solid particle is a catalyst particle.
23. (Currently Amended) The microfabricated chemical reactor of claim 2422, wherein said second solid particle is a catalyst particle that differs from said first particle.
24. (Currently Amended) The microfabricated chemical reactor of claim 2422, wherein said second particle differs from said first particle in at least one property selected from particle size, porosity, catalyst composition, catalyst support composition, and catalytic activity.
25. (Currently Amended) A microfabricated chemical reactor, comprising:
  - a plurality of lamina;
  - a first inlet port formed in at least one of said lamina;
  - a second inlet port formed in at least one of said lamina;
  - an outlet port formed in at least one of said lamina; and
  - a continuous channel formed in at least one of said lamina providing fluid communication from said first inlet port to said outlet port and from said second inlet port to said outlet port, wherein said first inlet port and said second inlet port are connected to said continuous channel by a microfluidic manifold, wherein said microfluidic feed manifold comprises an interleaved arrangement of a plurality gas feed channels and a plurality of said liquid feed channels.

26. (Canceled) The microfabricated chemical reactor of claim 25, wherein said microfluidic manifold comprises a series of interleaved inlet channels.
27. (Currently Amended) The microfabricated chemical reactor of claim ~~26~~25, wherein said series of interleaved inlet channels comprises inlet channels providing fluid communication between said first inlet port and with said continuous channel, and wherein said series of interleaved inlet channels further comprises inlet channels providing fluid communication between said second inlet port and said continuous channel.
28. (Original) The microfabricated chemical reactor of claim 27, wherein said inlet channels in fluid communication with said first inlet port are interleaved with said inlet channels in fluid communication with said second inlet port.
29. (Original) The microfabricated chemical reactor of claim 25, wherein said first inlet port is provided for a gaseous reactant and said second inlet is provided for a liquid reactant.
30. (Currently Amended) A microfabricated chemical reactor, comprising:  
a plurality of lamina;  
an inlet port formed in at least one of said lamina;  
an outlet port formed in at least one of said lamina;  
a continuous channel formed in at least one of said lamina and providing fluid communication between said first inlet port and said outlet port; and  
a plurality of integral catalyst support structures formed in said continuous channel, said integral catalyst support structures supporting a catalyst.

31. (Original) A microfabricated chemical reactor adapted for conducting heterogeneous catalytic reactions with an overall mass transfer coefficient greater than  $2 \text{ sec}^{-1}$ .
32. (Original) The microfabricated chemical reactor of claim 31, wherein said heterogeneous catalytic reaction involves liquid and gaseous reactants.
33. (Currently Amended) ~~The~~A microfabricated chemical reactor of claim 15, further comprising:
- ~~a plurality of lamina;~~
  - ~~an inlet port formed in at least one of said lamina;~~
  - ~~an outlet port formed in at least one of said lamina;~~
  - ~~a continuous channel formed in at least one of said lamina providing fluid communication between said inlet port and said outlet port; and~~
  - a temperature detector within said continuous channel.
34. (Original) The microfabricated chemical reactor of claim 33, further comprising:  
a heating element.
35. (Original) A microfabricated chemical reactor, comprising:
- a plurality of lamina;
  - an inlet port formed in at least one of said lamina;
  - an outlet port formed in at least one of said lamina;
  - a continuous channel formed in at least one of said lamina and providing fluid communication between said inlet port and said outlet port;
  - an accessory channel formed in at least one of said lamina for incorporating an accessory into the microfabricated chemical reactor.

36. (Original) The microfabricated chemical reactor of claim 35, wherein said accessory is selected from a group consisting of a temperature sensor, a pressure sensor, a heater element, a fiber optic device, and a sampling device.